REMARKS

Claims 1 – 35, 44 and 45 are pending in the application.

Claim Rejections – 35 USC § 102 & 103

The Examiner rejects claims 1-7, 15-17, 20-28, 31-35, 44 and 45 under 35 U.S.C. 102(e) as being anticipated by Sato et al. U.S. Patent No. 6,388,667.

The Examiner further rejects claims 8-12, 13, 14, 18, 19, 29, and 30 under U.S.C. 103(a) as being unpatentable over Sato at. U.S. Patent No. 6,388,667 in view of Matsuda U.S. Patent No. 6,734,885.

The present invention, as described in the field of invention section, relates to interaction with and positioning of virtual objects in virtual environments, and more particularly to permissible movements of three dimensional objects in virtual environments. The present invention discloses the novel and inventive idea of a virtual object which is splitable between two or more terminals. The present invention also teaches the novel and inventive idea of restricting the number of consequential interactions of a virtual object with further virtual objects when a maximum number of consequential interactions is reached.

Sato teaches, as described in the summary of invention section, an image generation device and information storage medium that can simplify the construction of a virtual world for image generation.

Matsuda, as described in the background of invention section relates to an information processing apparatus and method for presenting a three dimensional space wherein the user is capable of operating his avatar to communicate with other avatars.

Favorable reconsideration of this rejection in view of the above amendments and the following explanations is respectfully requested.

Claim 1 defines a virtual object for use in an object oriented environment; the virtual object comprising at least a user-sensible aspect and further comprising at least a functional aspect, the user-sensible aspect being encapsulated as a user-sensible encapsulation, separately from the functional aspect, *the virtual object being splitable by locating respective user-sensitive and functional encapsulations at different terminals.*

Thus the virtual objects taught by the present invention may be *split* between two or more terminals, based on the separate encapsulation of their visual and functional parts. Consequently, with the present invention, a virtual object may be presented and operated on a remote terminal which downloads only its visual part, whereas its functional part remains only on a central server, where it is centrally managed. This novel idea, as introduced by the present invention, may save bandwidth when the terminal and server communicate over a network and also allows for faster interaction over a network, with less delay for downloading new objects and fewer demands on the resources of the local users. Thus in an interactive game with multiple users, the central server carries out most of the processing and far less processing and in particular far less duplication occurs at the remote terminals.

Sato (US Pat. No. 6388667) discloses a totally different environment for the development of virtual reality applications than the one introduced in this invention. With the Sato environment, the actor is provided with both characteristics as objects and characteristics as processes (column 8, line 14). However the Sato environment actor is *not a splitable* object, such that its user-sensible aspect and its functional aspect can be *separated onto*

different terminals. In other words, Sato does not teach or even hints at the idea of *splitting a virtual object* between different terminals as taught by the present invention, and defined by claim 1.

It is thus respectfully believed that claim 1 as amended is novel and inventive over the prior art and should be allowed.

Claim 8 defines a first virtual object within a virtual computing environment, the first virtual object having a relationship with a second virtual object, the relationship being such that an interaction with the first virtual object is operable to bring about a consequential interaction with at least the second object, the virtual computing environment comprising a method for restricting the number of consequential interactions of a virtual object with further virtual objects when a maximum number of consequential interactions is reached.

Sato fails to disclose the bringing about of such a consequential interaction and a method for *restricting the number of consequential interactions* of a virtual object with further virtual objects when a maximum number of consequential interactions is reached.

Matsuda U.S. Patent No. 6,734,885 does recognize it is necessary to impose an upper limit on the number of clients allowed to participate in the 3-dimensional virtual space in Column 2, line 31. However, the idea of limiting the number of users, though it may *indirectly* lower the number of interactions between objects, is totally different than the novel idea of *directly* limiting *the number of interactions* itself, as taught by the present invention. The motivation behind limiting the number of interactions may be independent

of efficiency and system loads considerations and may have to do with logical application consideration. For examples, the present invention introduced virtual objects may be used to present family members in a family tree, and a limitation may be set for presenting close family members of a first member (object) according to the number of interactions between the first member (object) and indirectly interacted second relatives (objects).

It is thus respectfully believed that claim 8 as previously presented is both novel and inventive over the prior art and should be allowed.

Claim 15 defines a virtual reality environment comprising a scene and at least one virtual object supported by a scene database, the scene database having at least a first interchangeable functional unit associated therewith, the first interchangeable functional unit comprising functionality for the at least one first virtual object, the virtual reality environment configured to support a method for facilitating interaction by a plurality of users at a plurality of client terminals with the at least one first object, the first object having display and interaction characteristics and functional characteristics, the method comprising: encapsulating the display and interaction characteristics in a display part of the first object, encapsulating functional characteristics in a functional part of the first object, downloading the display part of the first object to user client terminals, and retaining the functional part of the first object at a remote location networked with the user client terminals, thereby facilitating *splitting said virtual object between two terminals.*

As described above for claim 1, Sato discloses a totally different environment for the development of virtual reality applications than the one introduced in this invention. The Sato environment actor is *not a splitable* object, such that its user-sensible aspect and its

functional aspect can be separated. In other words, Sato does not teach or even hints at the idea of splitting a virtual object between different terminals as taught by the present invention.

It is thus respectfully believed that claim 15 as amended is novel over the prior art and should be allowed

Claim 34 defines a dedicated control element for controlling the functionality of virtual objects belonging to a set of virtual objects within a virtual reality environment, the dedicated control element being associated with the virtual reality environment, and comprising: identification functionality for determining whether a virtual object within the virtual reality environment is a member of the set, and control functionality for processing events received from the identified virtual object, the control functionality being operable to bring about a consequential interaction of the virtual object with further virtual objects, and to *restrict the number of consequential interactions of a virtual object with further virtual objects when a maximum number of consequential interactions is reached*..

As described above for claim 8, neither Sato nor Matuda disclose or even hint at such a method for restricting the number of consequential interactions of a virtual object with further virtual objects when a maximum number of consequential interactions is reached.

It is thus respectfully believed that claim 34 as amended is both novel and inventive over the prior art and should be allowed.

Claim 35 defines a method for facilitating interaction by a plurality of users at a plurality of client terminals with at least a first object, the first object having display and interaction

characteristics and functional characteristics, in a networked virtual reality environment, the method comprising: encapsulating the display characteristics in a display and interaction part of the first object, encapsulating functional characteristics in a functional part of the first object, downloading the display and interaction part of the first object to user client terminals, and retaining the functional part of the first object at a remote location networked with the user client terminals *thereby facilitating splitting said virtual object between two terminals.*

As described above for claim 1, Sato never teaches or even hints at the idea of a virtual object that may be split between different terminals, such that one user client terminal may download the visual part of the object only and present the object while the functional part of the object is retained at a remote location which is networked with the user client terminal, as taught by the present invention.

It is thus respectfully believed that claim 35 as amended is novel over the prior art and should be allowed.

Claim 44 defines a method for controlling the functionality of a set of virtual objects within a virtual reality environment, comprising: incorporating allowable functionality for the set of virtual objects within a dedicated control element associated with the virtual reality environment, incorporating identification functionality within the dedicated control element to enable the dedicated control element to distinguish between virtual objects within the set and virtual objects not within the set, and thereby allowing the dedicated control element to control virtual objects within the set, the control element comprising a method for facilitating interaction by a plurality of users

at a plurality of client terminals with at least a first object, the virtual object comprising at least a user-sensible aspect and further comprising at least a functional aspect, the user-sensible aspect being encapsulated as a user-sensible encapsulation, separately from the functional aspect, thereby *facilitating splitting said virtual object between two terminals.*

As described above for claim 1, Sato never teaches or even hints at the idea of a method for controlling the functionality of a virtual objects that may be split between diffcrent terminals, such that one user client terminal may download the visual part of the object only and present the object while the functional part of the object is retained at a remote location which is networked with the user client terminal, as taught by the present invention.

It is thus rcspectfully believed that claim 44 as amended is novel over the prior art and should be allowed.

Claim 45 defines a method for facilitating interaction by a plurality of users at a plurality of client terminals with at least a first object, the first object having display characteristics and functional characteristics, in a networked virtual reality environment, the method comprising: encapsulating the display characteristics in a display and interaction part of the first object, encapsulating functional characteristics in a functional part of the first object, downloading the display and interaction part of the first object to user client terminals, and retaining the functional part of the first object at a remote location networked with the user client terminals, thereby *facilitating splitting said virtual object between two terminals*, the interactions comprising trading using the objects,;.

As described above for claim 1, Sato never teaches or even hints at the idea of a method for facilitating interaction by a plurality of users at a plurality of client terminals with at least a first object, the virtual object being splitable between two terminals, as taught by the present invention.

It is thus respectfully believed that claim 45 as amended is novel over the prior art and should be allowed.

The remaining claims mentioned in this section of the Office Action are believed to be allowable as being dependent on an allowable main claim.

All of the matters raised by the Examiner have been dealt with and are believed to have been overcome.

In view of the foregoing, it is respectfully submitted that all the claims now pending in the application are allowable.

An early Notice of Allowance is therefore respectfully requested.

Respectfully submitted,

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Date: July 20, 2005